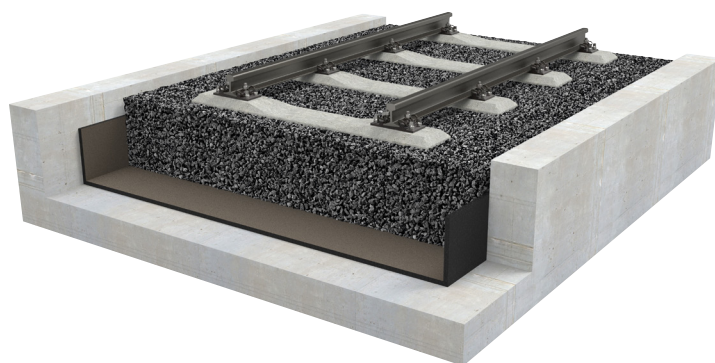
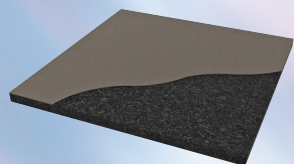




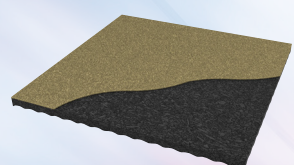
Product catalogue

UNDER BALLAST MATS

CIPROTEC 1013, 6018, 1515



CIPROTEC 3017



Effective protection for ballasted track



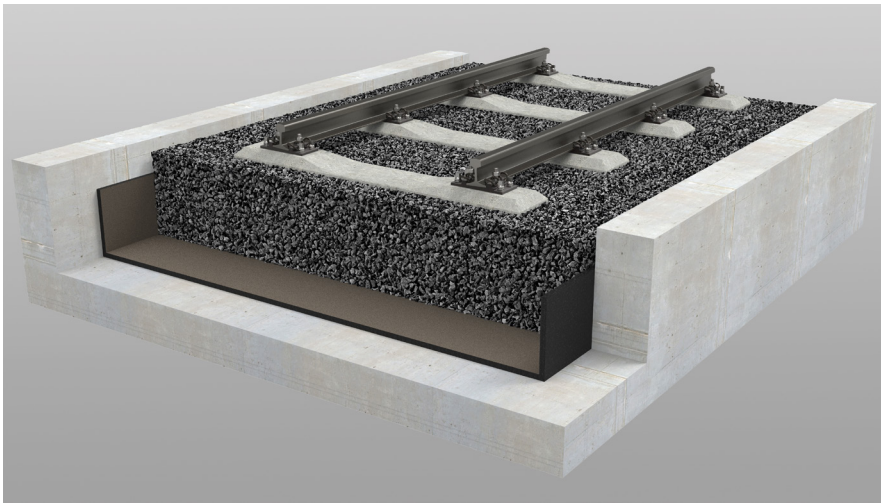
In the area of track superstructure, there are different variants, the ballast track and the ballastless track, for which different components are used in each case with regard to wear and possible vibration protection. Under ballast mats are suitable as a protective measure against vibrations and structure-borne noise transmission caused by passing trains.

Under ballast mats are laid over the entire surface directly under the ballast bed in order to achieve both elastic decoupling and protection of the track components. Under ballast mats protect, for example, ballast from being destroyed so that the track does not need to be repacked as frequently. This can also ensure a stable track position and protect any existing subfloor sealing.

The elastic under ballast mats retain their stability even when subjected to long-lasting continuous loads and under different climatic conditions, thus contributing to track system maintenance cost efficiency and a long service life for the ballast bed.

The optimal solution for your project

- Reduction of vibration and structure-borne sound immissions
- Stabilisation of track structures
- Ballast protection
- Reduction of ballast bed thickness
- Reduction of track maintenance costs
- Long service life and simple installation
- No replacement necessary over the entire service life of the superstructure
- Recyclable materials that can be returned to the recycling loop



Quality assurance according to standards

Our products are manufactured and reused in Germany.



Calenberg quality management is carried out in accordance with recognised procedures that meet the quality requirements of established standard regulations. The Ciprotec types have been tested extensively in accordance with DIN EN 17282 and DIN 45673-5 by renowned testing institutes (TU München, MPA NRW und Müller BBM). All test reports are available upon customer request.

The Ciprotec Under Ballast Mat



Acting with an eye on the future – conserving resources – potential in rail transport technology

The two-layered product consists of 100% recyclable elastomers and is laminated with a geotextile (GRK 5) on its upper surface. Ciprotec helps to reduce environmental impact and conserve resources. The composition of the elastomer layer from bonded rubber fibres as well as different mat thicknesses and the geotextile protective layer aid any common ballast superstructure in achieving the required elasticity.

The recyclable and therefore economical Under Ballast Mats are used in metropolitan, underground and tram traffic, long-distance and high-speed traffic and freight traffic.

The product types on offer

Note: Values determined according to [DIN EN 17282](#) and [DIN 45673-5](#).

CIPROTEC 1013 UP TO A 25-T AXLE LOAD DIN EN 17282 TC 3			DIN 45673-5	Thickness: ≈ 14.5 mm
Bedding modulus	Load range	Value ± 15 % N/mm ³	Value ± 15 % N/mm ³	
Static bedding modulus C _{stat}	0.02 – 0.10 N/mm ²	0.054	0.10	
Dynamic bedding modulus C _{dyn} (Evaluation range 0.02 – 0.10 N/mm ²)	Frequency	Value ± 15 % N/mm ³	Value ± 15 % N/mm ³	
	5 Hz	0.075	0.122	
	10 Hz	0.080	0.130	
	20 Hz	0.085	0.137	

CIPROTEC 6018 UP TO A 25-T AXLE LOAD DIN EN 17282 TC 3			DIN 45673-5	Thickness: ≈ 19.5 mm
Bedding modulus	Load range	Value ± 15 % N/mm ³	Value ± 15 % N/mm ³	
Static bedding modulus C _{stat}	0.02 – 0.10 N/mm ²	0.0417	0.06	
Dynamic bedding modulus C _{dyn} (Evaluation range 0.02 – 0.10 N/mm ²)	Frequency	Value ± 15 % N/mm ³	Value ± 15 % N/mm ³	
	5 Hz	0.0585	0.091	
	10 Hz	0.0628	0.095	
	20 Hz	0.0659	0.100	

Note: Values determined according to [DIN EN 17282](#).

CIPROTEC 3017 UP TO A 25-T AXLE LOAD DIN EN 17282 TC 3			Thickness: ≈ 18.5 mm
Static bedding modulus C _{stat}	Load range 0.02 – 0.10 N/mm ²	0.0304 ± 15 % N/mm ³	
Dynamic bedding modulus C _{dyn} (Evaluation range 0.02 – 0.10 N/mm ²)	5 Hz	0.0417 ± 15 % N/mm ³	
	10 Hz	0.0464 ± 15 % N/mm ³	
	20 Hz	0.0480 ± 15 % N/mm ³	

CIPROTEC 1515 UP TO A 35-T AXLE LOAD DIN EN 17282 TC 4			Thickness: ≈ 16.5 mm
Static bedding modulus C _{stat}	Load range 0.02 – 0.164 N/mm ²	0.0729 ± 15 % N/mm ³	
Dynamic bedding modulus C _{dyn} (Evaluation range 0.02 – 0.164 N/mm ²)	5 Hz	0.0969 ± 15 % N/mm ³	
	10 Hz	0.1003 ± 15 % N/mm ³	
	20 Hz	0.1048 ± 15 % N/mm ³	

Accessories

Available from Calenberg upon request:

- EPDM cover strip (dimensions 0.1 m x 1.3 mm), fully self-adhesive

Delivery

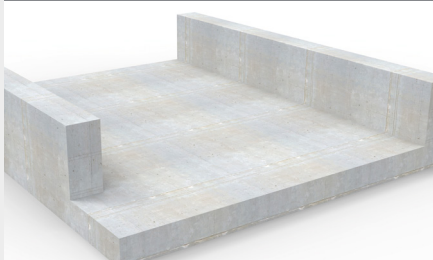
The Under Ballast Mats are supplied in standard rolls of 10 m x 1.25 m, packed on pallets.

Upon request, special lengths and sheet products, for example for use as side mats, can also be manufactured.

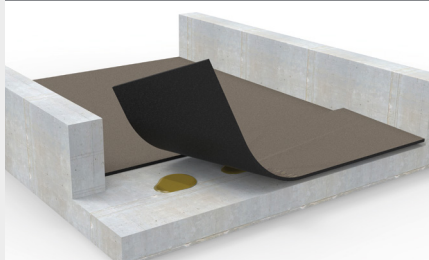
Simple installation of all Under Ballast mats

Important! The installation instructions of the railway operator must be taken into account.

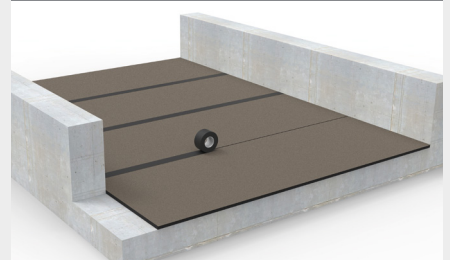
1. Clean substrate



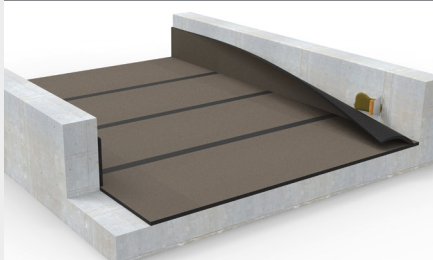
2. Bonding to the substrate



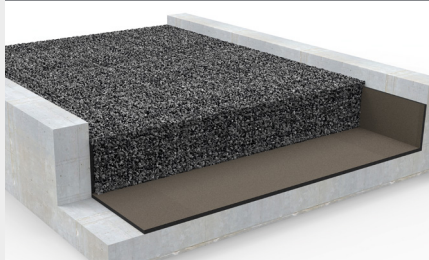
3. Bonding of the mat joints



4. Fitting the side mats



5. Covering with ballast



Note

The geotextile-laminated side acts as a protective layer and must always face the ballast (upwards).

Contact

Would you like to learn more about our products and services? Our team of experts will be happy to support you with your project:

bahn@calenberg-ingenieure.de



Am Knübel 2-4
31020 Salzhemmendorf | Germany

Tel. + 49 5153 940 00
Fax + 49 5153 940 049

info@calenberg-ingenieure.de
www.calenberg-ingenieure.com

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